UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/594,177 | 08/13/2007 | Andreas Ehlich | 2590.0050002/EJH/SAC | 5698 |

26111 7590 06/23/2010

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

| EXAMINER | |
|---|---|
| HIRIYANNA, KELAGINAMANE T | |
| ART UNIT | PAPER NUMBER |
| 1633 | |
| MAIL DATE | DELIVERY MODE |
| 06/23/2010 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/594,177 | EHLICH, ANDREAS | |
| | Examiner | Art Unit | |
| | KELAGINAMANE HIRIYANNA | 1633 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *1* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *17 June 2009*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-47 and 49-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-47, 49-53* are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

**DETAILED ACTION**

## Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

The inventions as claimed are classified into following groups:

I. Claims 1-9, 11 & 12 drawn to a method of monitoring cell differentiation culturing cells that contain a recombinant nucleic acid encoding a secretable reporter protein under conditions of differentiation.

II Claims 1 & 10 drawn to a method of monitoring cell differentiation culturing cells that contain a recombinant nucleic acid encoding a secretable reporter protein under conditions of differentiation and further encoding a selectable marker expressed by multi or pluripotent cells.

III Claims 13 & 14-16 drawn to a reporter gene construct for monitoring cell differentiation and to a cell comprising said construct.

IV Claims 17-20 drawn to an organ or a transplant or a non-human animal or a composition of matter comprising cells that comprise reporter gene construct for monitoring cell differentiation.

V Claims 21 drawn to an array comprising a solid support where in cells, said cell aggregates or tissues that comprise in their cell a reporter gene construct for monitoring cell differentiation.

VI Claims 22 drawn to an Apparatus for analyzing an array comprising a solid support where in cells, said cell aggregates or tissues that comprise in their cell a reporter gene construct for monitoring cell differentiation.

VII Claims 23-30 and 33-36 drawn to a method for obtaining, profiling or both of a modulator of cell differentiation.

VIII Claims 23 & 31 drawn to a method for obtaining, profiling or both a modulator of cell differentiation wherein the method is performed on an array.

IX Claims 32 (a) drawn to a method of monitoring cell differentiation culturing cells that contain a recombinant nucleic acid encoding a secretable reporter protein under conditions of differentiation where in the cells are further genetically engineered to over-express or inhibit the expression of a target gene.

X Claims 32 (b) drawn to a method for obtaining, profiling or both a modulator of cell differentiation wherein the cells are further genetically engineered to over-express or inhibit the expression of a target gene.

XI Claims 37 drawn to a method of obtaining, and manufacturing a drug which promotes or inhibits formation of specific cell types.

XII Claims 38 drawn to a method of manufacturing an agent which supports wound healing and/or healing of damaged tissues.

XIII Claims 39-41 drawn to a method of determining toxicity of a test substance comprising obtaining, profiling or both of cell differentiation.

XIV Claims 42 (a) drawn to a kit useful for conducting a method of monitoring cell differentiation culturing cells that contain a recombinant nucleic acid encoding a secretable reporter protein under conditions of differentiation.

XV Claims 42 (b) drawn to a kit useful for conducting a method for obtaining, profiling or both of a modulator of cell differentiation.

XVI Claims 43 (a) drawn to a method of conducting a drug discovery business comprising providing one or more assays involving a method of monitoring cell differentiation culturing cells that contain a recombinant nucleic acid encoding a secretable reporter protein under conditions of differentiation.

XVII Claims 43 (b) drawn to a method of conducting a drug discovery business comprising providing one or more assays for conducting a method for obtaining, profiling or both of a modulator of cell differentiation.

XVIII Claims 44 (a) drawn to a method of conducting a target discovery business comprising providing one or more assays involving a method of monitoring cell differentiation culturing cells that contain a recombinant nucleic acid encoding a secretable reporter protein under conditions of differentiation.

XIX Claims 44 (b) drawn to a method of conducting a target discovery business comprising providing one or more assays for conducting a method for obtaining, profiling or both of a modulator of cell differentiation.

XX Claims 45 drawn to a modulator of cell differentiation identified by a method of obtaining, profiling or both of a modulator of cell differentiation.

XXI Claims 46 drawn to a pharmaceutical composition for use in the modulation of cell differentiation comprising a modulator identified according to a method for obtaining, profiling or both of a modulator of cell differentiation.

XXII Claims 47 drawn to a method for making a pharmaceutical composition for use in modulating cell differentiation.

XXIII Claims 49-52 drawn to a vector comprising a promoter region of mouse alpha myosin gene etc., operably linked to a heterologous DNA sequence.

XXIV Claims 49 & 53 drawn to a vector comprising the nucleotide sequence of SEQ ID NO:3.

The inventions listed above as Groups I-XXIV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The inventions listed above as Groups I-XXIV lack unity of invention because even though the inventions of these groups require the technical feature of 'monitoring cell

differentiation with the expression of recombinant reporter gene", this technical feature is not a special technical feature as it does not make a contribution over the prior art for example in view of Geofrey et al (US 2003/008836 A1; entire article anticipates claims 1, 2, 5-7,10, 13, 14, 16, 17, 20, 32-36, and 49 Claims. Claims 3, 4, 8, 9, 11, 12, 15, 18, 19, 21-31 and 37-48 are made obvious in paragraphs 0053, & 0057 Geofrey et al reference (above) in view of Mueller et al reference (2000, FAEB J. 14:2540-2548; entire article; abstract); and/or Wobus et al (1995 Circulation 92:I114; entire article); $Wobus_b$ et al (1997, J. Mol. Cell. Cardiology 29:1525-1539; entire article; abstract); Klug et al (1996; J.Clin.Invest 98:216-224). Geofrey iscloses a method for monitoring myoblast differentiation by transfecting with vectors that drive the expression of alpha-gal under the control of rabbit MHC promoter and the reporter gene alpha-gal is secreted in to the medium and can be nalysed at different points during differentiation of myoblast into mature myotubes (Paragraphs 0053-0057) and thus anticipating the claims indicated. Muller, Wobus, $Wobus_b$ references disclose other promoters and the other cells (e.g., stem cells) used for differentiation used in the instant invention claimed as limitation in different claims indicated above). Thus the invention as whole was anticipated or obvious over the prior art as indicated. Thus the invention as whole lacks unity under PCT rules and hence a restriction as indicated above is proper. Thus each of the above inventions and their mode of operation, and the effects evaluated in each of the above invention are distinct and different from the other. Therefore, a search and examination for the patentability of the above inventive groups together would generate an undue search burden on the examiner. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their different classification;

(b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;

(c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

**Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined** even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention**.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Claim 1 link(s) inventions I-II, Claim 23 link(s) invention VII & VIII, Claim 32 links inventions IX & X, Claim 42 links inventions XIV & XV, Claim 43 links inventions XVI & XVII, claim 44 links inventions XVIII & XIX and claim 49 links inventions XXIII & XXIV. The restriction requirement between the linked inventions is **subject to** the non-allowance of the linking claim(s). Upon the indication of allowability of the linking

claim(s), the restriction requirement as to the linked inventions **shall** be withdrawn and any claim(s) depending from or otherwise requiring all the limitations of the allowable linking claim(s) will be rejoined and fully examined for patentability in accordance with 37 CFR 1.104 **Claims that require all the limitations of an allowable linking claim** will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims that depend from or otherwise include all the limitations of the allowable product claim will be rejoined in accordance with the provisions of MPEP § 821.04. **Process claims that depend from or otherwise include all the limitations of the patentable product** will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103, and 112. Until an elected product claim is found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowed product claim will not be rejoined. See "Guidance on Treatment of Product and Process Claims in light of In re Ochiai, In re Brouwer and 35 U.S.C. § 103(b)," 1184 O.G. 86 (March 26, 1996). Additionally, in order to retain the right to rejoinder in accordance with the above policy, Applicant is advised that the process claims should be amended during prosecution either to maintain dependency on the product claims or to otherwise include the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note

that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

This application contains claims directed to the following patentably distinct species: Should Group I be elected from above, the.

(a). Applicant is further required to chose a single species of the stem cells recited in claim 4. i.e., embryonic stem cell or MAPCs

(b). Applicant is further required to chose a single species of the cell type recited as a Markush group in claim 7.

(c). Applicant is further required to chose a single species of the promoter/enhancer types recited as a Markush group in claim 9.

The species are independent because they are structurally distinct.

This application contains claims directed to the following patentably distinct species: Should Group XXIII be elected from above, the.

(a). Applicant is further required to chose a single species of a promoter among the: recited in claim 49. i.e., mouse alpha myosin heavy chain gene promoter or the ventricular myosin regulatory light chain gene promoter.

(b). Applicant is further required to choose a single species of the SEQ ID NOs: recited in claim 50. i.e., SEQ ID NO:1 or SEQ ID NO2. that corresponds to promoter selected in (a).

The species are independent because they are structurally distinct.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is

allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Applicant is advised that the response to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement is traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Kelaginamane Hiriyanna Ph.D.*, whose telephone number is (571) 272-3307. The examiner can normally be reached Monday through Thursday from 9 AM-7PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Joseph Woitach Ph.D.*, may be reached at (571) 272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR)

system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). When calling please have your application serial number or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. For all other customer support, please call the USPTO call center (UCC) at (800) 786-9199.

/Robert M Kelly/

Primary Examiner, Art Unit 1633